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A Survey of Livestock Breeding and Feeding Practices

By
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A Purebred Hereford Bull of Exceptional Merit, Representing the True Beef Type.

A SURVEY OF LIVESTOCK BREEDING AND FEEDING PRACTICES IN THREE DIFFERENT SECTIONS OF OKLAHOMA

By

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Livestock produce more than one-third of the total farm income of Oklahoma,¹ and purebred livestock has about 40 per cent greater earning power than scrubs.² According to the census of 1920, about 3 per cent of the cattle in the United States, 3.5 per cent of the hogs, 1.3 per cent of the sheep and less than 1 per cent of the horses are purebred.³ The value per head of Oklahoma livestock is below the average for the United States.⁴ This fact should be a challenge to the Oklahoma farmer and breeder to combine the latest discoveries in the field of heredity and the experience of the past with his skill in an effort to attain maximum improvement. Since livestock production is one of the chief sources of both pride and profit to a large percentage of Oklahoma farmers, and has played no small part in the history of the state and there is abundant evidence that it will continue to be a major factor in the progress of the commonwealth, it is worthy of the most careful and painstaking study.

EXPERIMENTAL RESULTS FROM THE USE OF PUREBRED SIRES

During the last twelve years, the use of good purebred beef bulls, in producing beef under farm conditions, has been under study at Sni-A-Bar farms, Grain Valley, Missouri. This study was made possible through the will of the late W. R. Nelson, in cooperation with the United States Department of Agriculture.⁵ Purebred bulls were used on "common red cows" for the first cross and the greatest improvement resulted in this cross. However, each subsequent cross has increased the quality and market value of the cattle approximately in proportion to the number of crosses of purebreeding. After the third or fourth cross, the cattle were very much like purebreds in conformation and quality. Early maturity has stood out conspicuously in the progress of this study, and the steers have consistently sold for about \$2.00 per hundred pounds more than the average of other cattle on the same market. Calves sired by a purebred bull returned \$21.75 more profit per head at the Oklahoma Station in 1927 than calves sired by a scrub bull and grown under the same conditions.⁶

The influence of a purebred dairy bull in increasing dairy production through breeding has been studied by the Iowa Experiment station,⁷ and it

¹Department of Agricultural Economics. (Information to the writer).

²United States Department of Agriculture, Circular No. 235.

³United States Census, 1920.

⁴United States Department of Agriculture, Year Book of 1927.

⁵United States Department of Agriculture. Misc. Cir. No. 74.

⁶Oklahoma Agricultural Experiment Station. (Unpublished data).

⁷Iowa Agricultural Experiment Station, Bulletin No. 188.

was found with but one exception that the daughters of purebred bulls proved to be larger producers than their scrub dams. In persistency of production, the first generation grades were intermediate between the scrubs and purebred cows in the herd, but the second generation grades produced almost as much as the purebreds. In feed requirements for milk production, the second generation grades were most efficient, while the first generation grades were second and the scrub cows were least efficient. It was also observed that there was marked variation in the ability of sires of the same breed to transmit milk and butter fat production to their daughters. The Dairy Department of the Oklahoma Station is conducting a test similar to the Iowa experiment, but the study is not sufficiently advanced at present to report.

The Oklahoma Station¹ found in a test comparing lambs sired by a purebred ram, with those sired by a scrub, that the purebred ram used added \$1.98 per head to the market value of lambs, over those sired by a scrub. At the Missouri Station,² lambs by a purebred ram of mediocre individual merit and out of common ewes sold for \$2.85 per hundred pounds more than those by a scrub ram. The lambs by the purebred ram gained 26.6 per cent faster and required 59 per cent less feed to produce 100 pounds of gain. Lambs by purebred and by scrub rams have also been compared by the Kentucky Station³ and the lambs sired by purebred rams were more meaty, grew more rapidly, were of finer quality, showed a higher dressing percentage and also an increase in yield and quality of wool, in comparison to those by scrub rams.

FARMERS' VIEWPOINT

Although the work of the Agricultural Experiment Stations has shown some of the possibilities for livestock improvement through the use of purebred sires, many farmers still hesitate to buy purebred sires at a cost above that of a grade. This is especially true among farmers who have small herds. Some of the farmers who have not used a purebred sire question the claims made for the purebred, and do not hesitate to state that the local buyers pay them as much for livestock sired by grade and scrub sires as for that sired by a purebred. Furthermore, there is still a feeling among the farmers that livestock, by purebred sires, must have extra care to give it any additional value over a scrub. The claim is frequently made that scrubs are hardier and will attain more weight when forced to "rough it" for all they get. Therefore, in view of high-priced feed and labor, they think that the scrub serves them more satisfactorily.

PURPOSE OF THE SURVEY

The primary purpose of this survey was to check some of the claims which have been made in favor of purebred sires, by a study of the facts

¹Oklahoma Agricultural Experiment Station Bulletin No. 151.

²Missouri Agricultural Experiment Station Circular No. 65.

³Kentucky Agricultural Experiment Station Bulletin No. 243.

given by the farmers themselves, through a comparison of results which are being secured by the farmers from the use of purebred and grade sires on farms in Oklahoma.

SOURCE OF INFORMATION

The facts used in this report were collected by the survey method, during the summer of 1927 and the early part of 1928. The survey was made in three different sections of the state; the first, in Payne county, representing central Oklahoma, was made during the summer of 1927 as a preliminary study. A study of the facts obtained was thought to justify further application of the survey method to include a sample of farms representing at least two other sections of the state.

Three counties (Garfield, Alfalfa and Grant) were chosen to represent the wheat section which is considered to be one of the best general livestock sections of the state. Later, four counties (Grady, Caddo, Kiowa and Comanche) were chosen to represent a more diversified system of farming as to crops grown and livestock production practices in use. The farms were chosen by traveling across the county through the county seat from north to south and east to west, approximately half on state roads and half on county roads. Stops were made at every third farm on the route, as a rule, and if the operator was available for an interview, records were taken. The information secured was recorded on a questionnaire provided for this purpose, and this report is based on these facts. A total of 341 records were taken and a comparison with census reports indicates that a reliable sample was secured from each section surveyed, and that the entire group as a whole is a fair representation of the general livestock farming practices to be found in Oklahoma.

CATTLE FOR PAYNE COUNTY

Records taken on cattle in Payne county are not divided on a basis of the age of the cattle sold because the first questionnaires used did not classify cattle by ages, but the figures given include cattle of all ages sold and considered together. It is probable that the average for each group is somewhat distorted, but since the trend found for each age group for the other sections is the same, it appears that the figures for this section also have a value.

Cattle showing the characteristics of one or more of the beef breeds were found on 43.02 per cent of the farms while 48.83 per cent had cattle showing dairy blood. Only 29.73 per cent of the farms having beef cattle were using a purebred bull and only 82 per cent of these owned a purebred bull. While 70.27 per cent of the farmers in this group used a grade bull, only 65.5 per cent of these owned a bull. (In this discussion, all sires, other than purebreds, are called grade).

Of the farmers who had dairy cattle, 33.3 per cent were using a purebred bull and all of them owned a bull. Although 66.7 per cent of the farmers

were using grade dairy bulls, only 32.2 per cent owned a bull at the time they were visited.

Farmers who used purebred beef bulls received an average of \$10.63 more per head or 49.2 per cent more for cattle sold than those who used grades. The dairy cattle sired by a purebred bull brought \$3.31 more per head or 10.8 per cent more than those by a grade. Although cattle were declared to be the most profitable class of livestock in the experience of 60 per cent of the farmers in this group, 8.1 per cent did not have cattle.

Table I. Cattle sold by farmers visited in Payne county.

BEEF CATTLE	No. Farms	Ave. No. Cows and Heifers Owned per Farm	Ave. No. Stocker Cattle Owned per Farm	Cattle Sold	Ave. Received per Head*
Farms using Purebred bull	11	17.9	2	126	\$32.20
Farms using Grade bull	26	7.34	3.23	84	\$21.58
DAIRY CATTLE					
Farms using Purebred bull	14	13.5	2.8	46	\$34.02
Farms using Grade bull	28	3.7	.64	28	\$30.71

*Only cattle sold on the open market are included, based on sales made during 1926, 60.7 per cent of the farms sold cattle.

HOG PRODUCTION IN PAYNE COUNTY

The facts secured show that only 66.2 per cent of the farmers had hogs, and it was generally stated by those who did not have hogs at the time, that they did not make a practice of keeping hogs as a part of their farming operations. Purebred hogs were being produced by 10.5 per cent of the farmers who were producing hogs, and 14.5 per cent of the hogs sold were purebreds.

Table II. Showing Comparison of Returns from Purebred and Grade Hogs in Payne County.

	No. Farms	Ave. No. Sows and Gilts per Farm	Ave. No. Stockers per Farm	Total Hogs Sold	Ave. Received per Head
Farms using Pb. boar and Gr. sows	27	5.3	11.1	466	\$20.91
Farms using Gr. boar and Gr. sows	24	2.66	6.8	126	17.45
Farms using both Pb. boars & sows	6	7.0	22.6	101	32.50

Purebred boars were being used by 52.9 per cent of the farmers who owned grade sows, 67.2 per cent of all hogs sold were produced by this group of men.

These figures based on hogs sold on the open market during 1926 show that the purebred hogs brought \$11.59 more per head than the grades, by a purebred boar. This is an increase of 55.4 per cent which appears unreasonable. Since the preliminary records taken were incomplete on feeding practices, the only explanation offered here is that observations indicated that the men who had purebred sows had superior purebred boars to those who had grade sows. The hogs by purebred boars and out of grade sows sold for \$3.46 more per head than those by grade boars. This is 19.6 per cent in favor of the purebred boars.

SHEEP IN PAYNE COUNTY

Only three farms visited in Payne county had sheep. These farms averaged 77 head per farm; two were using a purebred ram and one a grade. One of these farmers declared that sheep are the most profitable class of livestock that he has handled. The flock which was headed by a grade ram was very small (only six head); therefore no comparison is made between the returns from these flocks. Sales from all three of the flocks in 1926 averaged \$7.00 per head and all sheep sold were lambs.

HORSES IN PAYNE COUNTY

Horses or mules were owned by 94.1 per cent of the farmers in this group; those who did not own one or the other were share croppers, and work stock was furnished by the landowner. Mules represented 29 per cent of the horse stock found on these farms. The farms averaged 2.19 mares per farm, and 23.4 per cent of the farmers who had mares bred one or more during the spring of 1927. However, only 23.7 per cent of all mares were bred. Although 61.7 per cent of the farmers stated that they had access to a purebred stallion, only 58 per cent practice breeding to a purebred. Only 9.3 per cent of the farmers in this group made sales during 1926 and these received an average of \$60.00 per head.

BEEF CATTLE, NORTHWEST SECTION

Table III shows a comparison of returns from the use of purebred and grade bulls of the beef and dairy breeds separately for the northwest section. It was found that 71.5 per cent of the farmers, who had cattle, had beef cattle, and 69.3 per cent of those who had beef cattle used purebred bulls on grade cows and an additional 4.5 per cent used both purebred bulls and cows. The herds which are headed by a purebred bull are larger than those headed by grades, by approximately 3 cows or 32 per cent. Although the herds in which a grade beef bull is used are smaller than those using a purebred, they average practically the same number of cows found in the herds headed by a purebred dairy bull. The cows sold from the herds using a purebred beef bull on grade cows was 16.4 per cent of those retained, while those using a

Table III. Comparison of returns from the use of purebred and grade bulls for both beef and dairy cattle for the northwest section.

AV. NO. CATTLE SOLD PER FARM AND AV. RECD. PER HEAD									
BEEF CATTLE	No. Farms	Av. No. Cows & Heifers Owned per Farm	Av. No. Stocker Cattle per Farm	Cows		Yearlings		Calves	
				Av. per Head	Av. per Head	Av. per Head	Av. per Head		
Farms using Pure-bred bulls	61	12.16	5.26	2	\$62.75	21.9	\$53.37	11.0	\$29.15
Farms using Grade bulls	23	9.21	5.6	2	\$55.83	18	\$35.02	4.6	\$23.80
Farms using Pure-bred bulls and cows	4	37	20	1	\$71.50	5.83	\$67.30	0	
DAIRY CATTLE									
Farms using Pure-bred bulls	23	9.9	9.5	1.3	\$55.93	6.8	\$51.27	4	\$23.06
Farms using Grade bulls	14	6.75	2	2	\$25.00	8	\$37.52	8	\$25.15

*Based on number of farms selling cattle during 1927, and 72 per cent of the farms sold one or more head.

grade beef bull sold 21.7 per cent as many cows as was retained. The herds headed by a purebred beef bull sold more than twice as many calves as those headed by grades. Evidently a greater percentage of the calves in the latter group was held back for breeding stock or to be fed out and sold as yearlings. The four herds in which all of the cattle were purebred did not sell any calves in 1927 and the percentage of cows and yearlings sold is noticeably smaller. It is therefore probable that heifers make up a larger percentage of the cow herd than for the other two groups, and that the owners were attempting to increase the size of their herds.

Attention is called to the increase in value of the cattle by purebred beef bulls over those by grades; cows by a purebred bull brought 12.4 per cent more than those by a grade; yearlings 52.3 per cent more and calves 22 per cent more. Purebred beef cattle sold, as the others on the open market show a decided increase in value over either class of the grades; the numbers sold are small and therefore the values established by the purebreds might be misleading if considered conclusive.

DAIRY CATTLE, NORTHWEST SECTION

The herds headed by purebred dairy bulls are almost 50 per cent larger than those headed by grade bulls, and the number of cattle that were being held as stockers, at the time the farms were visited, is nearly five times as large, but the number and per cent sold from the herds using grade bulls is greater. Although the cows and yearlings by purebred dairy bulls outsold those by grade bulls, the calves by grades outsold those by purebred bulls. The cows by purebred bulls brought 123.7 per cent more than those by grades, and the yearlings 36.6 per cent more, but the calves by grade bulls brought 9 per cent more than those by purebreds. The facts secured do not disclose a satisfactory explanation for this difference in favor of the grade sire. No dairy herds were found in which all cattle on hand were purebred; however, 7 herds had one or more purebred cows or heifers.

HOGS, NORTHWEST SECTION

Table IV. Showing a comparison of returns from the use of purebred and grade boars, also purebred and grade sows, for the northwest section.

	No. Farms	No. Sows and Gilts per Farm	No. Stock- ers per Farm	Total No. Hogs Sold	Av. Recd. per Head
Farms using Purebred boars and Grade sows	23	6.8	26.3	858	\$13.79
Farms using Grade boars and Grade sows	23	4.3	13.8	207	\$12.19
Farms using both Purebred boars and sows	27	7.3	26.6	543	\$20.18

Only 82.4 per cent of the farms visited in this section had hogs on hand, while only 70.8 per cent of those who had hogs were producing hogs for market purposes as 29.2 per cent practice buying pigs or shoats to produce

meat for the family. Both purebred boars and sows were used by 36.9 per cent of the farmers who are producing hogs for the market, an additional 31.6 per cent use a purebred boar, and 31.5 per cent use both grade boars and sows.

Purebred hogs represented 33.7 per cent of all hogs sold on the open market in 1927, by this group of farmers, and an additional 53.3 per cent were sired by purebred boars, while only 13 per cent were sired by grade and non-descript boars. The purebreds brought \$6.39 per head more than those by a purebred boar and out of grade sows, this is an increase of 46.3 per cent. Those by a purebred boar and out of grade sows brought \$1.60 per head or 13 per cent more than those by a grade boar and out of grade sows.

It was observed that the purebred hogs on the farms at the time this survey was made were invariably superior to the grades and scrubs. The purebred sows were especially superior to the grades. It will be observed in Table IV that the purebred herds and those using only a purebred boar are practically the same size but the number of hogs sold from the purebred herds is 36.8 per cent less than from the herds using only a purebred boar. This is partly due to the fact that all purebreds sold for breeding purposes are not included in this report. Furthermore, the table shows that the group using a purebred boar on grade sows sold more than twice as many head per sow as the group using grade boars. But it can not be satisfactorily explained from the facts in hand why the difference is so great. One suggestion is offered, however. One man in the latter group reported heavy losses from hog cholera and this man had one of the larger herds in the group.

Table V. Feeding practices found in use by farmers growing hogs in the northwest section.

	SUMMER				WINTER			
	Per Cent Feeding Grain	Per Cent Having Pasture	Per Cent Feeding Sk. Milk	Per Cent Feeding Tankage	Per Cent Feeding Grain	Per Cent Having Pasture	Per Cent Feeding Sk. Milk	Per Cent Feeding Tankage
Farms having both Pb. boars and sows	89	70	20	10	100	30	20	25
Farms having Pb. boars and Gr. sows	90	60	17	13	100	39	21	26
Farms having both Gr. boars and sows	80	52	26	9	100	30	30	9

Table V shows the percentage of farmers feeding grain, skim milk, tankage and also of those that have pasture for both summer and winter. For the first two groups, those having purebred boars and sows and those having purebred boars and grade sows, there is no significant difference in the feeding practices. However, for the group using grade boars and sows the percentage is lower for each consideration except those who feed skim milk

barring grain fed in winter which is the same for each. Although information regarding the amount of the different feeds fed is not available, the appearance of the hogs at the time the farms were visited suggests that as a general rule there is not much difference in the amount for all three of the groups.

SHEEP, NORTHWEST SECTION

Table VI. Showing a comparison of returns from the use of purebred and grade rams for northwest section.

	No. Farms	No. Sheep Sold	Av. Received per Head	Per Cent Feeding Before Selling
Farms using Purebred rams	15	206	\$13.75	13.3
Farms using Grade rams	5	24	\$10.00	20

Only 16 per cent of the farms visited had sheep and 42 per cent of those have had sheep only one year, while 33 per cent of the sheep owners have had sheep only one year, while 33 per cent of the sheep owners have had sheep for more than five years. Purebred rams were being used by 75 per cent of the farmers who had sheep, and about half of these have a part of the flock represented by purebred ewes, but none of them had a complete purebred flock. However, 89 per cent of the sheep sold were produced by the men who were using purebred rams, and these brought \$3.75 per head or 37.5 per cent more than those sired by grade rams. The difference in feeding practices by the two groups of farmers is apparently unimportant, each of those who reported as feeding a little before selling, stated that they did not fatten. Two men were found who make a practice of feeding from 500 to 1000 lambs in the fall but since they buy the lambs and feed them out, they are not included in the figures in Table VI.

HORSES, NORTHWEST SECTION

Table VII. Horses and mules, northwest section.

	No. Farms	Av. No. Per Farm	Total No. Sold	Av. Recd. Per Head	No. Farmers Breeding	Per Cent of Mares Bred
Mares	111	3.92	2	\$85.00	23	13
Geldings	102	3.06	40	\$42.50		
Mules	46	3.8	34	\$77.00		

Mares were owned on 88.8 per cent of the farms surveyed in this section, and the farms averaged 3.92 mares per farm. It is of interest that only two mares were sold by 111 farmers, and only 13 per cent of the mares owned by these farmers were bred during 1927, while 20.7 per cent of the farmers who owned mares bred one or more. The tendency seemed to be to breed only the best mares; therefore, many farmers who had four or more mares were breeding only one or two, and approximately 79 per cent did not breed

Table VIII. A comparison of returns from purebred and grade bulls for both beef and dairy cattle for the southwest section.

BEEF CATTLE	No. Farms	Av. No. Cows & Heifers Owned per Farm	Av. No. Stocker Cattle per Farm	AV. NO. CATTLE SOLD PER FARM & AV. RECD. PER HEAD*				
				Cows	Average per Head	Yearlings	Average per Head	Calves
Farms using Purebred bull	23	28.7	7.5	8.6	\$62.50	14.8	\$52.85	9.8
Farms using Grade bull	16	11.3	8.8	4.6	\$49.00	7	\$34.65	4.3
DAIRY CATTLE								
Farms using Purebred bull	44	7.2	2.4	4	\$65.83	3.9	\$40.44	2.3
Farms using Grade bull	41	6.3	1.8	3	\$52.42	3.7	\$28.87	3.1

*Based on number of farms selling cattle during 1927. 76.6 per cent sold cattle.

**Includes 20 head of calves sold by one farmer as weaners at \$4.00 per head.

any. It was somewhat surprising to find that only 36.8 per cent of the farmers were using mules as one of the sources of farm power. Although the average received for horses and mules sold appear low, they are above the average for the state in 1927. Complaint was made by several farmers that the kind of stallions and jacks available for breeding were so inferior that they did not care to breed their mares. On the other hand two men who keep stallion and jack stock complained that the farmers stopped breeding their mares and it has become very unprofitable to keep stallions and jacks, and these men stated that at such time the farmers showed sufficient interest in breeding mares to justify the financial risk necessary, good stallions and jacks would be immediately available to them.

BEEF CATTLE, SOUTHWEST SECTION

Of the farms surveyed in the southwest section, 95.3 per cent had one or more head of cattle, and in round numbers 68 per cent of these had cattle showing dairy blood, while 32 per cent had cattle representing one or more of the beef breeds. Purebred bulls were being used by 58.9 per cent of the farmers who had beef cattle and 41.1 per cent were using a grade bull. The cow herds owned by the farmers who use purebred bulls are two and one-half times as large as those herds headed by a grade.

Purebred beef cows were owned by 10.2 per cent of the farmers who had beef cattle and the purebred herds averaged 24 cows and heifers per farm, but the number of cattle sold on the open market was less than 2 head per farm; the others were sold for breeding purposes and are therefore not included in this report. Due to this fact, the few purebreds sold on the open market are included with the purebred bull group shown in Table VIII.

Cows by purebred beef bulls averaged \$62.50, yearlings \$52.85, and calves \$21.40. However, this includes 20 calves sold as vealers by one farmer for \$4.00 per head. Since the group by grade bulls does not contain a similar sale, it is probably fairer to exclude these 20 calves in making the comparison. If this is done, the lot by purebred bulls has an average of \$31.35 per head for the calves.

The cows by grade beef bulls averaged \$49.00, yearlings \$34.65, and calves \$25.65 per head. It is therefore evident that cows by purebred bulls brought 27.5 per cent more than those by grades; yearlings 52.5 per cent more, and calves, exclusive of the 20 veals, 22 per cent more than those by grade bulls.

The differences given here are largely if not entirely due to more desirable type and quality of the cattle by purebred bulls. According to the feeding practices given by the farmers, the extra value of the cattle by purebred bulls was evidently not due to feeding. It was found that only 10 per cent of the farmers feed for extra finish before selling their cattle, and an additional 10 per cent feed some cake or other feed if the grass gets scarce before they are ready to sell. Therefore, only one-fifth of the farmers were prac-

ticing feeding for extra value and half of these do not generally feed. A study of the facts secured shows that approximately the same percentage of those who have grade bulls feed in a limited way also. Although the facts obtained from the farmers are incomplete as to the time the cattle were sold, the records indicate that by far the majority are sold in the summer or early fall, and the cattle are generally sold as calves or yearlings.

DAIRY CATTLE, SOUTHWEST SECTION

Purebred bulls were being used by 51.7 per cent of the farmers who were visited in the southwest section, and 48.3 per cent were using grade or scrub bulls. The herds headed by purebred and by grade bulls are practically the same, the former averaged 7.2 cows and heifers per farm, and the latter 6.3 head per farm. Purebred cows are owned by 14.1 per cent of the farmers in the group, but the purebred herds average only 4.5 cows and heifers per farm. This small average is due to the fact that a high percentage of the men in this group have only one or two cows, and these generally were purchased to produce milk for home use only. The cattle sales from these purebred herds averaged less than one head per farm, which is strikingly small, and because of this the few which were sold are included with the group by purebred bulls shown in Table VIII.

The cows by purebred dairy bulls brought an average of \$65.83, yearlings \$40.44, and calves \$16.80; cows by grade bulls brought an average of \$52.42, yearlings \$28.87, and calves \$11.23 per head. Accordingly cows by purebred bulls brought 25.5 per cent more than those by grades, yearlings 40 per cent more, and calves 49.5 per cent more. The very large difference favoring the calves by the purebred bull can not be satisfactorily explained from the facts at hand. However, it is possible that some of the calves by purebred bulls were sold to farmers at prices above their market value. Unfortunately, the records do not show those sold to farmers.

HOGS, SOUTHWEST SECTION

Table IX. A comparison of returns from the use of purebred and grade boars, and purebred and grade sows for the southwest section.

	No. Farms	No. Sows and Gilts per Farm	No. Stockers per Farm	Total Hogs Sold	Average Received per Head
Farms using Purebred boars and Grade sows	23	1.7	21.4	641	\$18.50
Farms using Grade boars and Grade sows	20	2.8	8.4	291	\$13.25
Farms using Purebred boars and sows	25	5.6	33.5	882	\$19.40

Only 52.3 per cent of the farmers in this section were keeping hogs as a part of their farming operations, an additional 24.6 per cent were keeping hogs to produce meat for home use but the majority of these buy hogs and fatten them for this purpose, while 23.1 per cent stated that they do not keep

hogs. Purebred boars and grade sows were being used on 33.8 per cent of the farms, and both purebred boars and sows were being used on 36.7 per cent of the farms. Therefore purebred boars were in use on 70.5 per cent of the farms surveyed in this section. Farmers who were using purebred boars and grade sows sold during 1927, 16.4 head of hogs for each sow retained for breeding purposes. Those who used grade boars and sows sold only 5.2 head of hogs for each sow retained. Farmers who used both purebred boars and sows sold on the open market 6.3 head for each sow retained for breeding purposes. According to the figures secured approximately 5 per cent of the purebred pig crop was sold for breeding purposes; therefore this should be added to the sales of purebred hogs, making the total number 6.6 head sold for each sow retained. These figures indicate that the first group of farmers sold sows that had been used for breeding and did not replace them with gilts, thereby cutting down their production of hogs for 1928, while the figures for the other two groups of farmers indicate that they were continuing their production on about the same scale as followed for the previous year.

Table IX shows the average received per head for the three groups. Attention is called to the fact that 14 of the 23 farmers in the group using purebred boars and grade sows may have had a part of their herd made up of purebred sows, but they stated that papers had not been kept up and as a result they did not know in all cases which sows might be purebred. This may account in part for the favorable average of \$18.50 per head received by this group of farmers. The grade boar and grade sow herds averaged only \$13.25 per head for hogs sold. While the purebreds sold on the open market as the other hogs were, brought \$19.40 per head. This is only 90 cents more than was received for those in the purebred boar group, which is partly explained by the probability of some purebred sows being used as mentioned above.

On a basis of these figures, the farmers who were using purebred boars and grade sows received 39.6 per cent more for hogs sold than those who used grades, and the farmers who used both purebred boars and sows received 46.4 per cent more than those who used grades. The grades and nondescripts found on these farms were lacking in uniformity of type, color, and quality. It is therefore obvious that hogs by a purebred boar should outsell those of equal weight that are sired by grade and scrub boars.

A study of the feeding practices on the farms visited for this section does not reveal any important differences between the farms using purebred boars and those using grades. Only 57 per cent of the farmers who keep hogs have pasture for them. Alfalfa, cane, sudan, wheat, oats, barley, sweet clover, rye and native grass are the crops reported in use as pasture crops for hogs. Alfalfa is used by twice as many farmers as any other one crop, but all of these crops were reported favorably as pasture.

SHEEP, SOUTHWEST SECTION

Only 4.6 per cent of the farms visited in the southwest section had sheep and 66.6 per cent of these have had sheep only one year. The balance have

had sheep three years or longer. Two-thirds of the farmers who had sheep declared that sheep are the most profitable class of livestock that they have ever handled. All of the sheep reported sold during 1927 by these farmers were by a purebred ram and they averaged \$16.00 per head.

HORSES, SOUTHWEST SECTION

Mares were found on 68.4 per cent, geldings on 59.2 per cent and mules on 75.3 per cent of the farms surveyed. More mules were found per farm than mares or geldings as shown in Table X. Only 3 mares were sold by the 89 farmers owning mares, which averaged \$58.30 per head. Four geldings were sold which averaged \$32.50 and 28 mules averaged \$82.15 per head. Only 29 farmers or 32.5 per cent of those owning mares bred one or more in 1927, and only 22.35 per cent of the mares on hand were bred.

Table X. Horses and mules for the southwest section.

	No. Farms	Av. No. per Farm	Total Sold	Av. Reod. per Head	No. Farms Breeding	Per Cent Mares Bred
Mares	89	2.9	3	\$58.30	29	22.35
Geldings	77	2.5	4	\$32.50		
Mules	98	4.3	28	\$82.15		

COMPARISON OF BULLS BASED ON VALUE GIVEN BY FARMERS OF THE NORTHWEST SECTION

The points which are considered by the farmers in selecting sires, as given by them, are as follows: age, individuality, pedigree, cost, linebreeding, relationship of sire to the females on which he is to be used, excellence of herd from which the sire comes, sire of the animal and breed.

For the northwest section, the facts secured on cattle have been grouped according to the cost limit placed on bulls by the farmers, and both dairy and beef cattle are considered together because some of the sub-groups are decidedly small. Since the trend is the same for both beef and dairy cattle, it seems reasonably fair to group them for this comparison. The first group includes farmers who declared that they could not pay more than \$40.00 for a bull, and 21.7 per cent of the farmers who have cattle are in this group. These farmers sold an average of 3 head of cattle on the open market in 1927 for \$38.20 per head. The farms averaged 8.7 head of cows and heifers per farm, and 51.8 per cent used purebred bulls. Cattle by grade bulls brought \$9.00 per head more than those by a purebred for this group. Individual merit of the bull is considered by 83.8 per cent of the men in this group, only 18.6 per cent consider pedigree, 51.8 per cent give some consideration to the herd from which the bull is selected, and 7.4 per cent like to get one by a good sire, while none of them pay any attention to linebreeding and all insist that the bull be unrelated to their cows and prefer a calf.

The second group of farmers declared that they could not pay more than \$75.00 for a bull. This group includes 50.8 per cent of all the farmers for the northwest section and 72.5 per cent were using a purebred bull, and sold 12 head of cattle per farm for \$44.62 per head. Purebred bulls added \$11.50 per head to the receipts from cattle sold by this group of farmers. The herds are larger than the first group but average only 10.2 cows and heifers per farm. Pedigree is considered by 38.2 per cent of this group, individuality by 93.6 per cent, 74.6 per cent insist on getting a bull from a good herd but only 15 per cent give strict attention to his sire. This group of farmers were not interested in whether a bull had been line bred or not, but generally insist that he be unrelated to their cows. Age is given consideration but all prefer calves and yearlings.

The third group placed a limit of \$100 on a bull for use by them and 19.3 per cent of the farms surveyed in the northwest section are in this group. While these farms averaged 13 cows and heifers, only 9 head per farm were sold. These averaged \$46.09 per head. Purebred bulls were being used by 83.3 per cent of the farmers in this group and cattle by a purebred bull brought \$16.50 more per head than those by a grade. Pedigree is considered by only 25 per cent of the farmers in this group in selecting a bull, but everyone considers individuality, and 8.3 per cent insist on getting a bull by a distinguished sire, 75 per cent want the bull to come from a good herd and 8 per cent want a line bred bull, but all prefer that the bull be unrelated to their cows. Young bulls are generally sought but 8 per cent would consider a 2-year-old.

The last group included the farmers who expressed a willingness to pay more than \$100.00 for a bull, and some of these stated that the price is not so important if they can get a bull that measures up to their needs. Only 8 per cent of the farmers visited in the northwest section are in this group. These farms averaged 10.2 cows and heifers per farm and sold 7.5 head per farm at an average of \$63.33, but cattle by a purebred bull brought \$25.00 per head more than those by a grade. It is of interest that only 70 per cent of these farmers were using a purebred bull and 70 per cent consider pedigree in selecting a sire, and 20 per cent favor certain families of breeding. Ten per cent want a linebred bull and prefer that he be slightly related to their cows. All are particular about individual merit and prefer a bull under two years old when purchased.

COMPARISON OF BULLS BASED ON VALUE GIVEN ON THEM BY FARMERS OF THE SOUTHWEST SECTION

The distribution of facts given in answer to questions asked regarding the value and breeding of bulls for the southwest section seems to justify a division of beef and dairy cattle for this comparison. Figure 1 shows the average received per head for cattle sold and grouped according to the limit placed on a bull by the farmers for this section. Cattle of all ages are considered together; this seems to be justified because as shown in Table IX, the trend for each age group is the same.

Farmers who sold beef cattle were easily divided into four groups based

on the cost limit placed by them on a bull. The first group declared \$50.00 to be the upper limit that they could pay for a bull, and 31.2 per cent of those who have beef cattle are in this group. Those who used a purebred bull received an average of \$51.16 per head for cattle sold. This is \$21.40 more per head than those by a grade brought but only 21 per cent were using a purebred. Individuality is considered by 85 per cent of the men in this group when selecting a bull; 28.4 per cent consider pedigree, 100 per cent consider cost and insist that the bull must not be related to their cows, 7.1 per cent prefer a linebred bull. The excellence of the herd from which the bull is selected is not considered at all important by this group of farmers, but 93 per cent like to get a bull by a sire of some distinction. These herds average 8 cows and heifers and 9 head per farm were sold.

The second group gave \$100.00 to be the limit that they could pay for a bull, and 46.2 per cent are included in this group. Sixty-six per cent of the farmers in this group used a purebred bull, sold 11.7 head of cattle per farm for an average of \$36.46 per head. Twenty head of veal calves which were sold for \$4.00 per head are included in this group. The average received per head is materially lowered because of 17.7 per cent of the cattle being sold at this low figure. Cattle sired by a grade bull sold for an average of \$6.56 per head less than those by a purebred. There were no veal calves included in this group. In selecting a bull, 88 per cent of these farmers consider individual merit, 49.5 per cent consider pedigree, 16.5 per cent prefer a line bred bull, only 60 per cent insist that the bull should not be related to their cows. None of the farmers in this group consider the herd from which a bull is selected as important, but 82.5 per cent give special attention to the sire. These herds averaged 23.6 cows and heifers per farm.

The third group gave \$150.00 as the limit that they could invest in a bull, and only 7 per cent of the farmers who had beef cattle in the southwest section are in this group. However, all of these men were using purebred bulls. Cattle sold by these farmers averaged \$63.91 per head, and 37 head per farm were sold. Each farmer in this group considers individuality, pedigree, cost and the sire of the bull, but only 50 per cent consider the herd from which the bull is selected. Half or 50 per cent insist on the bull being line bred and 50 per cent prefer a bull which is not related to their cows. The herds averaged 36 cows and heifers per farm.

The fourth group expressed a willingness to pay more than \$200.00 for a bull, and 15.6 per cent are in this group. Each man in this group was using a purebred bull and 7.4 head per farm were sold for \$76.48 per head. Individual merit, pedigree, cost and the sire of the bull are considered by all of the men in this group when selecting a bull. A linebred bull is preferred by 42.9 per cent and 57.2 per cent insist that the bull should not be related to their cows. Thirty-four head of cows and heifers per farm are owned by these farmers.

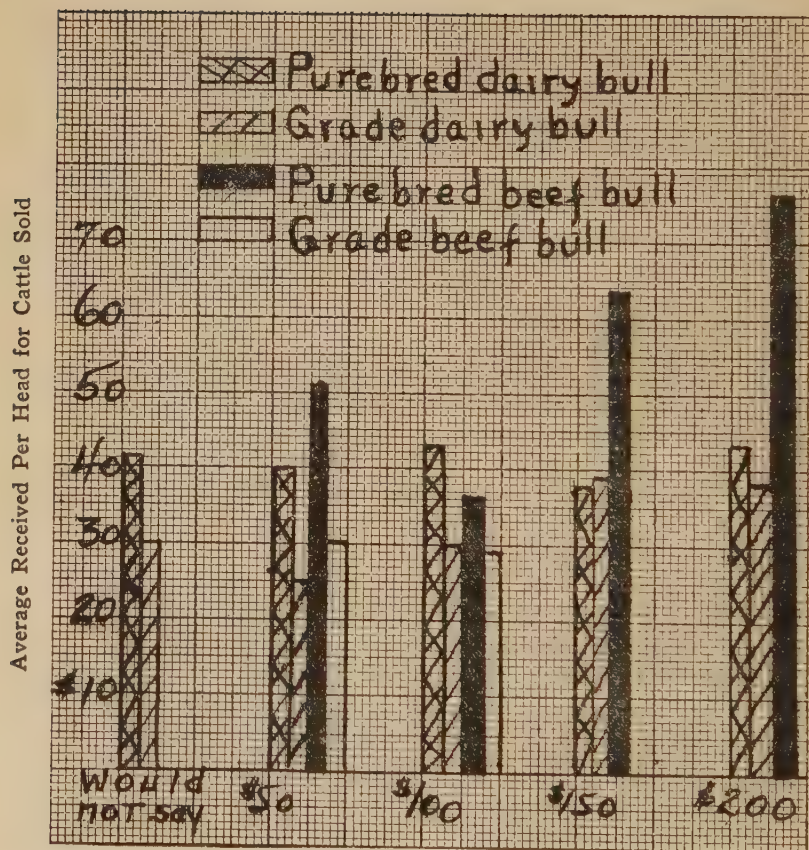
For the farmers who sold dairy cattle 14.5 per cent would not commit themselves as to the limit that they could pay for a bull; some of this group had only one or two cows and frankly stated that they could not afford to own a bull at any price. Purebred bulls were being used by 36.8 per cent of these farmers, and cattle by a purebred bull sold for \$12.86 per head more than those by a grade. Individuality of the bull is considered by 57.6 per cent of these farmers, pedigree is considered by 10.5 per cent, 5.3 per cent consider the herd from which the bull is selected. All of the farmers in this group insist that the bull should not be related to their cows. 10.5 per cent want a bull by a sire of some note, but none want a linebred bull. These herds averaged 6.8 cows and heifers and 3.5 head of cattle were sold per farm.

The second group of farmers who own dairy cattle stated that \$50.00 was the limit that they could pay for a bull, 32 per cent are in this group. Cattle by purebred bulls sold for an average of \$40.27 per head, which is \$15.84 per head more than those by a grade brought, and 37.9 per cent of these farmers were using a purebred. All of these men consider individuality in selecting a bull, and want a bull unrelated to their cows. Pedigree is considered by 20.6 per cent, the herd from which the sire is selected is considered by 76 per cent, 41.2 per cent want a bull by a sire of some note, while none want a linebred bull. These farms averaged 6.3 head of cows and heifers and 3.1 head of cattle per farm were sold.

The next group placed a limit of \$100.00 on a bull, 40 per cent of the men owning dairy cattle in the southwest section are in this group. A purebred bull is used by 60.6 per cent of the men in this group, and cattle sold by these men averaged \$43.51 per head. This is \$13.45 more than was averaged for cattle by a grade bull. Individuality is considered by 46.4 per cent of the men in this group in selecting a bull, pedigree by 57 per cent, the herd from which the bull is selected by 85 per cent, and 75 per cent want a bull by a sire of note. A linebred bull is preferred by 10.6 per cent, and 92.8 per cent want a bull unrelated to their cows. Farmers in this group owned an average of 8 cows and heifers and sold 5.4 head per farm.

The fourth group declared \$150.00 to be the limit that they could invest in a bull. 9.1 per cent of the owners of dairy cattle are in this group. The cattle by a purebred bull brought \$38.12 per head and those by a grade \$38.60. The percentage of calves sold is 8 per cent higher for this group of farmers than for any of the others. This may account for a lower average received compared to the other groups. The herds averaged 6.3 head of cows and heifers per farm and sold 4 head per farm. Individuality is considered by all of the farmers in this group when selecting a bull, while only 75 per cent pay any attention to the pedigree. The herd from which a bull is selected and the sire are taken into account by 87.5 per cent of these farmers. Only 12.5 per cent want a linebred bull but 100 per cent want a bull unrelated to their cows. It is also of interest that only 62.5 per cent of these farmers were using a purebred bull.

Another group of farmers expressed a willingness to pay more than \$200.00 for a dairy bull but only 4.5 per cent of the men who owned dairy cattle are in this group. A purebred bull was being used by 50 per cent of the men in this group. The cattle sired by a purebred bull brought \$43.00 per head, which is \$5.00 more than those by a grade. The herd where the bull is selected, sire and pedigree are considered by all of this group in selecting a dairy bull, 50 per cent want a linebred bull and 75 per cent want a bull unrelated to their cows.



Limit Placed on Bull by Farmers—Southwest Section

Fig. 1. This chart shows the average received a head for cattle sold by farmers who placed a different limit on the value of a bull.

Some of the dairy cattle sold were turned to buyers who perhaps paid more than the beef market value because they planned to resell to farmers who were wanting cattle carrying dairy blood; therefore, the figures may be somewhat distorted when considered on an open market basis. Approximately half of the farmers in the southwest section, who sold cattle sold to local buyers. The answers given to the question on method of selling can not be accurately tabulated, because a large majority of the farmers gave indefinite answers, due to the fact that they sometimes ship or truck the cattle to market but that this depends on what they are offered by a local buyer. This is true for all three sections studied.

MILK INCOME PER COW

The milk income per cow can not be determined with sufficient accuracy to give it significance, because the number of cows milked at different months of the year is quite variable and the skill of the enumerators was not highly enough developed at first to obtain complete information on milk income per cow milked. Therefore, a comparison of milk income per cow for the different groups is not attempted in this report.

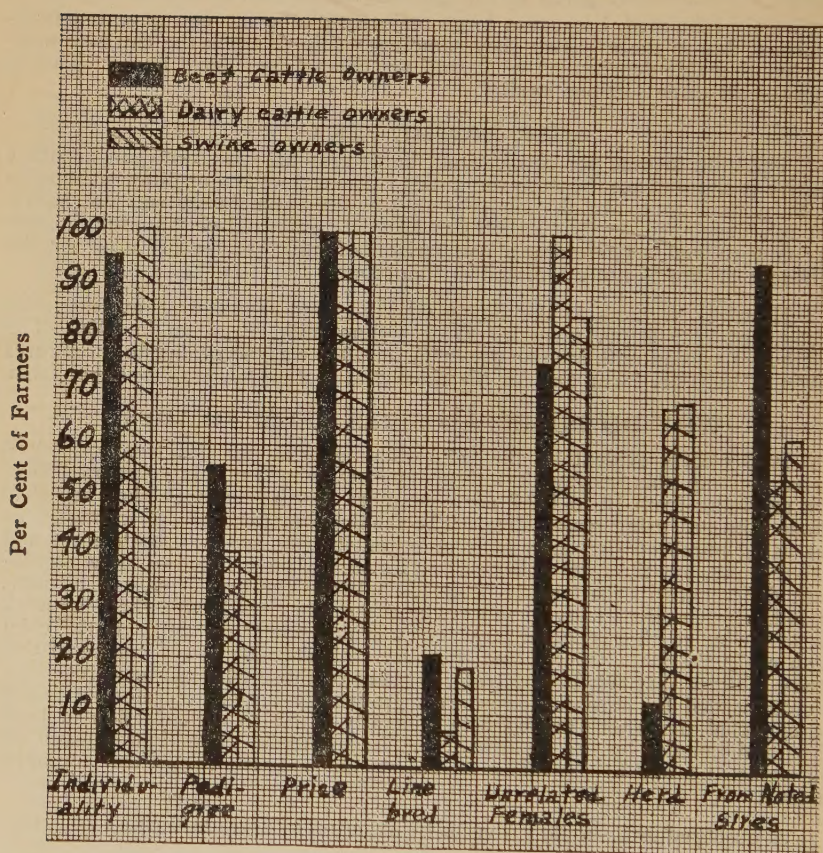
However, farmers in the Payne county group reported an average milk income of \$385.00 per farm for those selling milk or cream in 1926. The northwest section milk income per farm for 1927 was, according to the figures given, \$316.00 per farm, and for the southwest section it was \$339.00 per farm.

WHY DO PUREBRED SIRES EXCEL GRADES?

It is clearly evident by the facts obtained from the 341 farmers visited in conducting this survey that those farmers who are using purebred sires are receiving from 10 to 123.7 per cent more for the livestock they sell than those who are using grade sires. The feeding practices of the farmers who are using purebred sires may also be a contributing factor to both gross and net receipts, but the facts collected in this survey have failed to show significant differences in the feeding practices between the two groups of farmers. It is likely true that many of those who use grade sires handle their livestock as a sideline to their general farming, in which wheat or cotton is the chief cash crop; the facts secured and the observations made in the course of this study indicate that this is also true for many of those who use purebred sires. Herds headed by purebred sires are significantly larger; therefore it might be expected that more attention is generally given to the selection of both sires and females by the owners of the larger herds. The figures given on the value of a bull by the different farmers suggest that this is true for bulls at least.

A purebred sire should prove to be superior to a grade because he represents the product of definite and persistent effort upon the part of one or several men who have applied their skill to the task of improvement, through breeding, and this definite effort tends to make the animals pure for the different characters which they possess. Therefore, these animals are more prepotent in transmitting their characteristics than animals of unknown breeding, and, in most cases, with a mixed ancestry.

Fad and fancy may at times have a marked influence in livestock breeding but in the end, the demands fixed by utility which is directly determined by market preferences, must be met. Purebred sires, of the different types when used with reasonable skill, are certainly helping the farmers in producing a product that meets the utility demand and thereby are increasing the profits of those who skilfully use them.



Points Considered in Selecting Sires—Southwest Section

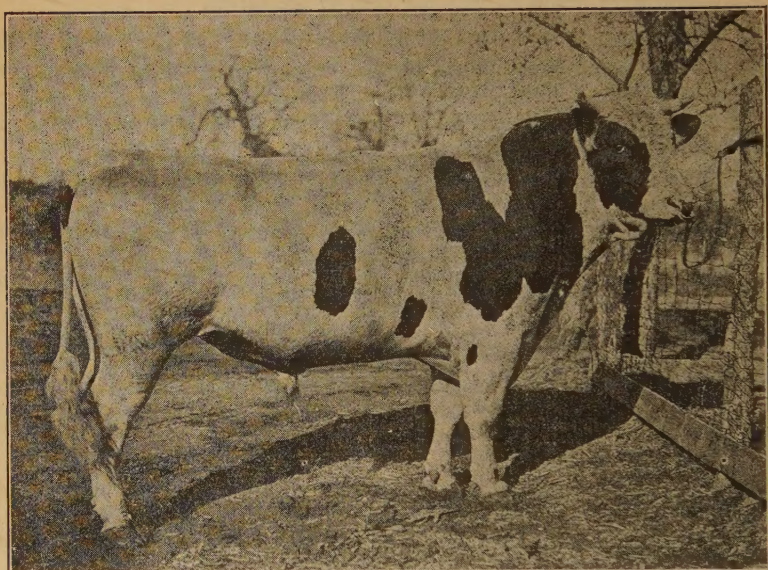
Fig. 2. Chart showing points considered by farmers in selecting sires and the per cent considering each point.

SUMMARY

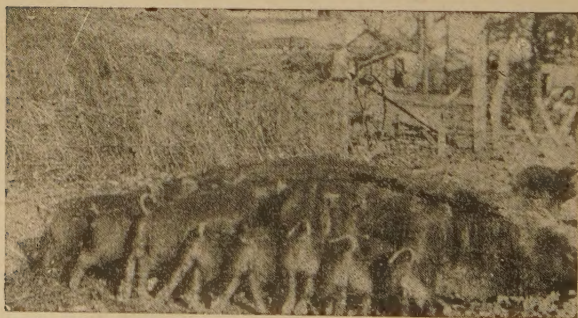
1. This circular is a report of facts secured from 341 farmers in three sections of the state.
2. Cattle were found on 95.6 per cent of the farms.
3. Seventy per cent of the farmers who had cattle produced some to sell.
4. Cattle by purebred bulls and sold on the open market brought from 10.8 to 123.7 per cent more than those by grade bulls.
5. Less than 10 per cent of the farmers practice fattening their cattle before selling them.
6. Purebred bulls were used by 55.2 per cent of the farmers who had cattle.
7. Herds headed by a purebred bull average 14 head of cows and heifers and those headed by a grade bull average 7 head.
8. Hogs were being produced for the market by only 58 per cent of the farmers.
9. Both purebred boars and sows were being used by 29.2 per cent of the farmers who were producing hogs for the market. These herds averaged 6.5 sows and gilts; 36.9 per cent were using purebred boars and grade sows, and the herds averaged 4.6 sows and gilts. The herds made up of grade boars and grade sows averaged 3.3 sows and gilts, 33.9 per cent of the farmers who were producing hogs for the market are in this group.
10. Hogs by a purebred boar and sold on the open market brought from 13 to 39 per cent more than those by a grade boar.
11. A shortage of pasture for hogs was found and less than 25 per cent of the farmers were feeding a protein supplement.
12. Only 9 per cent of the farmers had sheep, and the flocks averaged 35 head. Purebred rams were used on 65 per cent of the flocks. Sheep by a purebred ram brought 37.5 per cent more than those by a grade.
13. These farms averaged 2.5 mares but only 17.9 per cent of the mares were bred, and only 7 mares were sold by this group of farmers.
14. It is a common practice to feed the horse stock only when working it.
15. Many of the purebred sires, for all classes of livestock, in use by this group of farmers are of only mediocre merit and some are inferior.
16. Cost appears to be the major consideration by most farmers in determining the kind of sires they use. A high percentage of farmers insist on getting a sire which is unrelated to their females. Outside of the sires, pedigree receives little attention.
17. More than half of the farmers are willing to try cooperative ownership of sires but need help in perfecting such organizations.

ACKNOWLEDGEMENTS

Acknowledgement is made of the splendid cooperation of the 341 farmers who gave the information reported in this circular. It is hoped that this report will prove to be helpful to the farmers of the state who devote a portion of their time to livestock production.



A Purebred Holstein Bull Representing Dairy Type



A Litter of Pigs by a Purebred Boar.